

AMENDMENTS TO THE CLAIMS

1.-11. (Cancelled)

12. (New) An apparatus for promoting growth selected from the group consisting of bone growth, osteosynthesis of bone fragments, fixation of bone fractures, and osteosynthesis of bone fragments with fixation of bone fractures, said apparatus comprising:

at least one implant;

at least one piezoelectric element associated with said implant, said piezoelectric element under the action of forces, generates electrical pulses which serve as a stimulant for bone growth, said at least one piezoelectric element forming an integral component of said at least one implant; and

at least one contact element operative to come into contact only with surrounding bone and said piezoelectric element, said at least one contact element being made from electrically conductive material tolerable to humans; and wherein

said implant defining one pole and said contact element defining the other pole of said piezoelectric element; and

said piezoelectric element being arranged within said implant or within an implant pocket open towards the bone.

13. (New) The apparatus of claim 12, wherein said piezoelectric element terminates substantially flush with the surface of said implant.

14. (New) The apparatus of claim 12, wherein said implant is in the form of a dowel defining a central hollow space, said piezoelectric element being located in said central hollow space of said implant.

15. (New) The apparatus of claim 12, wherein said implant is selected from the group consisting of a pin-like holder for an artificial tooth, a bone or pedicle screw, a bone fixation pin, and a bone fixation element.

16. (New) The apparatus of claim 12, wherein said implant is a hip-joint socket defining at least one opening in the bottom thereof, said piezoelectric element being arranged to be located in said opening in the bottom of said hip-joint socket.

17. (New) The apparatus of claim 16, wherein said piezoelectric element is arranged in and fills said opening in the bottom of said hip-joint socket and is integrally connected to a piezoelectric layer extending over at least part of the inside of the bottom of said hip-joint socket.

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18. (New) The apparatus of claim 12, wherein said piezoelectric element is so constructed that, on normal loading of the bone structure, a current having an effective current intensity of about 10-100 μ A is generated.

19. (New) The apparatus of claim 12, wherein said piezoelectric element is made from a material selected from the group consisting of a piezoelectric ceramic, a zirconate ceramic and a titanate ceramic.

20. (New) The apparatus of claim 12, wherein at least two of said piezoelectric elements are provided and have an electrical connection selected from the group consisting of series electrical connection, and parallel electrical connection.

21. (New) The apparatus of claim 12, wherein said at least one implant is made of metallic material.

22. (New) The apparatus of claim 12, wherein said implant defines a negative pole and said contact element defines a positive pole.